



States' Programs to Control Mercury from Coal-Fired Power Plants

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What I Am Going to Cover

- ❑ The Problem
- ❑ What the Clean Air Act Requires
- ❑ EPA's Clean Air Mercury Rule
- ❑ NACAA Concerns with CAMR
- ❑ NACAA's Mercury Model
- ❑ What Other States are Doing



Mercury is a Serious Health Problem

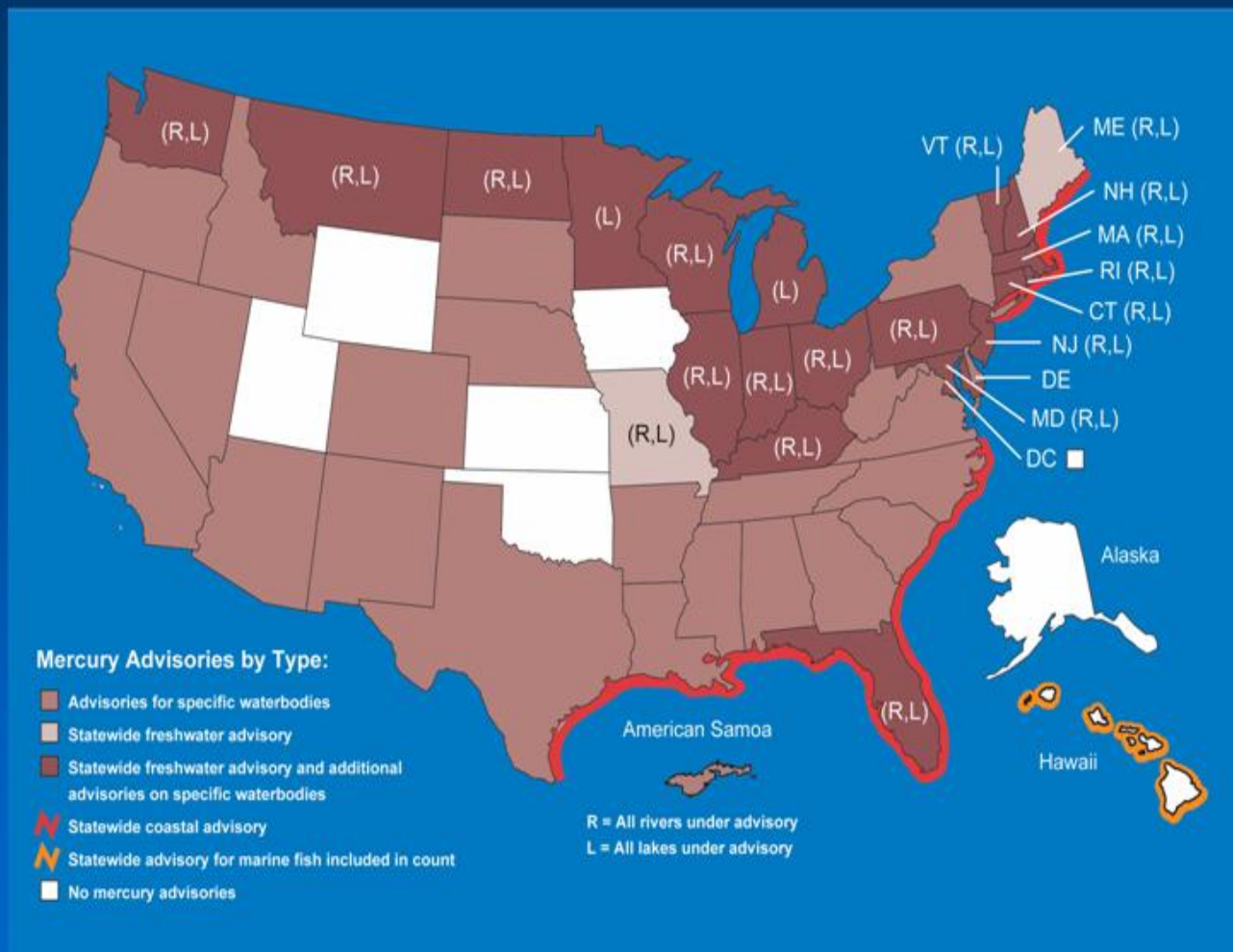
- ❑ As little as 1/70th of a teaspoon can contaminate all the fish in a 25-acre lake
- ❑ Exposure can cause damage to brain and nervous system, neurological disorders, delayed development, learning disabilities
- ❑ Especially harmful to children and developing fetuses
- ❑ 6% - 15% of women of childbearing age may be exposed to mercury above "safe" level
- ❑ Emerging data show correlation between heart attacks in men and mercury exposure



Mercury is a Pervasive Problem in the U.S.

- ❑ Coal-fired power plants are largest source of mercury air emissions = 48 tons of mercury per year
- ❑ 48 states issued fish consumption advisories for mercury
- ❑ Mercury concentrations and deposition levels are similar in the east and west

Fish Consumption Advisories for Mercury



NOTE: This map depicts the presence and type of fish advisories issued by the states for mercury as of December 2004. Because only selected waterbodies are monitored, this map does not reflect the full extent of chemical contamination of fish tissues in each state or province.



What the Clean Air Act Requires

- ❑ Section 112 of the Clean Air Act requires Maximum Achievable Control Technology (MACT) on major sources of Hazardous Air Pollutants (HAPs); mercury is one of the listed HAPs.
- ❑ For existing sources, MACT must reflect the level of control found on the average of the top 12% of sources in the same source category; the CAA requires compliance within three years.
- ❑ MACT is a technology requirement and is independent of risk.
- ❑ All other major sources emitting mercury (e.g., MWCs) have MACT requirements under Section 112 in place or under development.

EPA's CAMR Rule

- ❑ EPA published its Clean Air Mercury Rule (CAMR) on March 15, 2005; it was not based on Section 112 and does not reflect MACT.
- ❑ Cap-and-trade program
- ❑ Two-phased cap
 - ❑ 38 TPY cap in 2010 (~21% reduction)
 - ❑ based on co-benefits from CAIR
 - ❑ 15 TPY cap in 2018 (~68% reduction)
 - ❑ because of banking, expected actual Hg emissions in 2020 are 24 TPY; 15-TPY cap not expected until after 2025
- ❑ Each state assigned emissions budget (#/year) for each phase
- ❑ Banking of early emissions
- ❑ State plans were due November 17, 2006; must be as stringent as CAMR; Plans are similar to SIPs under Section 111, but no sanctions associated with them.



NACAA Concerns with CAMR

- ❑ Not protective of public health and environment
- ❑ Emission limits too weak
- ❑ Deadlines too protracted
- ❑ Does not represent what is technically feasible
- ❑ Allows trading – hot spots a serious problem



NACAA's Mercury Model

- ❑ In response to an inadequate federal rule, NACAA developed an alternative model rule for states/localities
- ❑ Applicable to coal-fired EGUs
- ❑ Addresses only Hg
- ❑ Recommends options for new and existing sources



NACAA's Mercury Model (continued)

- ❑ All new EGUs must achieve:
 - ❑ 90-95% capture; or
 - ❑ Outlet standard of 0.0025-0.0060 lb/GWh

NACAA's Mercury Model (continued)

- ❑ Existing sources: Option One
 - ❑ Phase I – end of 2008
 - ❑ 80% capture (average in-state units); or 0.01 lb/GWh (average in-state units)
 - ❑ Phase II – 2012
 - ❑ 90 - 95% capture (plant site average); or 0.0060 - 0.0025 lb/GWh (plant site average)

NACAA's Mercury Model (continued)

- ❑ Existing Sources: Option Two
 - ❑ Mercury – 0.0060–0.0025 lb/GWh or 90 – 95% capture by end of 2008
 - ❑ States could offer a two-phased multi-pollutant alternative
 - ❑ Phase I – end of 2008
 - ❑ 50% of MW controlled for mercury (90-95%)
 - ❑ Phase II – end of 2012
 - ❑ NOx – between 1.0 - 0.7 lb/MWh
 - ❑ SO₂ – = 1.5 lb/MWh or 95% fuel sulfur capture
 - ❑ PM – 0.30 - 0.015 lb/MMBTU
 - ❑ Mercury – 0.0060 - 0.0025 lb/GWh or 90 - 95% capture
- ❑ Prohibition on trading



Controls Are Feasible and Available

- ❑ Hg control technologies are commercially available; new technologies are rapidly emerging; 90% and higher control is technologically achievable
- ❑ Activated carbon injection technology has been used for mercury control in the waste industry for over 10 years and is transferrable
- ❑ Sorbent injection upstream of dedicated fabric filter – systems installed in early 1990s in Europe and the US
 - ❑ Utilize activated carbon/coke
 - ❑ ALL have operated reliably for more than 10 years
 - ❑ ALL achieve between 80 - 90% (some at 98%) mercury removal
 - ❑ ALL capture both elemental and oxidized mercury

Controls Are Cost Effective

- ❑ Cost effectiveness of Hg control is quite comparable to, and more attractive than, the cost effectiveness of SO₂ and NO_x controls from power plants (Hg:SO₂:NO_x: 0.2² to 0.8 mills/kwhr: 3-5 mills/kwhr: 1-2 mills/kwhr)
- ❑ Estimates show the average cost of controlling mercury will add 15 to 60 cents per month to a typical residential electric bill. One state estimated the cost of mercury control for its ratepayers at less than \$10 per year.
- ❑ Monetized benefits are much larger than monetized costs (benefits to cost ratio of 10)



Lawsuits on EPA'S CAMR

- ❑ New York
- ❑ New Jersey
- ❑ California
- ❑ Connecticut
- ❑ Maine
- ❑ Massachusetts
- ❑ Delaware
- ❑ Minnesota
- ❑ New Mexico
- ❑ Pennsylvania
- ❑ Vermont
- ❑ Wisconsin
- ❑ New Hampshire
- ❑ Michigan
- ❑ Illinois
- ❑ Rhode Island
- ❑ Chesapeake Bay Foundation
- ❑ Environmental Defense
- ❑ National Wildlife Federation
- ❑ Sierra Club
- ❑ U.S. Public Interest Research Group
- ❑ Natural Resources Defense Council
- ❑ Others



Lawsuits on EPA'S CAMR

- ❑ Litigants stated:
 - ❑ Regs under Section 111 contrary to Clean Air Act.
 - ❑ Current controls better than CAMR.
 - ❑ Emission increases will result from CAMR.
 - ❑ EPA ignored health and environmental impacts of cap and trade.



Lawsuits on EPA'S CAMR

- ❑ Oral arguments December 6, 2007.
- ❑ CAMR could be vacated.
- ❑ Section 112(j) would apply.
- ❑ States would be required to establish MACT on case-by-case basis.



State Actions

- ❑ Over the past couple of years, states have been developing their mercury programs.
- ❑ They have used NACAA model in a variety of ways (tailored to fit individual state needs).
- ❑ State plans were due November 17, 2006.
- ❑ EPA developing FIP-like program (based on CAMR model) for states that do not adopt their own programs or the federal model. Expected by January 2008.



Who Has Submitted Plans

- ❑ 18 states submitted plans by 11/17/06 deadline.
- ❑ Approximately 35 have submitted plans to date.
- ❑ 3 states do not intend to submit plans and will wait for the FIP.



Are States Going Beyond CAMR?

- ❑ YES! Many are developing plans that are more stringent.
- ❑ EPA will approve plans that prohibit interstate trading.
 - ❑ if state allows interstate trading, there can be no limits beyond federal rule EXCEPT
 - ❑ A state can be more stringent while participating in the federal trading program by limiting the allowances it distributes to the sources. No other limitations will be approvable.
- ❑ A state can submit a plan for federal approval and also adopt a state-only rule that is more stringent. The state-only limits are not federally enforceable, as they are not submitted to EPA for approval.

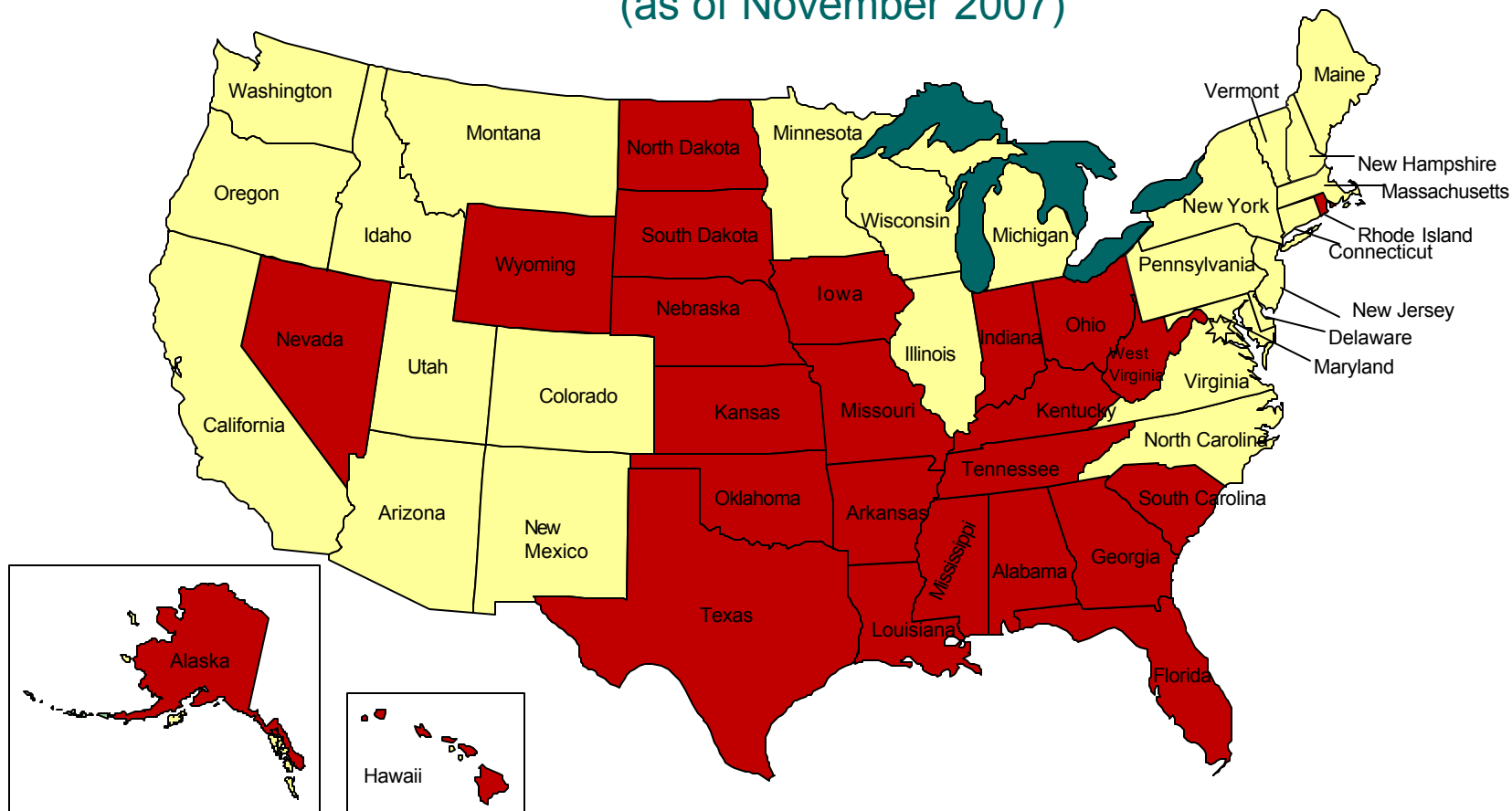
Are States Going Beyond CAMR? (continued)

❑ Based on latest information:

- ❑ 25 state programs are largely consistent with CAMR.
- ❑ 25 states have adopted or are pursuing more stringent programs. Among the more stringent measures, we've seen the following:
 - ❑ 21 call for greater reductions (most in the 80-90-percent range).
 - ❑ 18 will require the reductions to be realized sooner.
 - ❑ 19 will prohibit or restrict trading in some way.

State Mercury Programs

(as of November 2007)



Yellow = More stringent than CAMR*

Red = Adopting Federal CAMR

*stricter limits, tighter deadlines, trading restrictions



Virginia's Neighbors

- ❑ DE – More stringent than CAMR
- ❑ KY – CAMR model
- ❑ MD – More stringent than CAMR
- ❑ NC – More stringent than CAMR
- ❑ PA – More stringent than CAMR
- ❑ TN – CAMR model
- ❑ WV – CAMR model



Delaware

- ❑ Two-phased reduction approach
- ❑ 80% capture and control by 2009
- ❑ 90% capture and control by 2013
- ❑ Not participating in national trading program



Maryland

- ❑ Two-phased reduction approach
- ❑ 80% reduction by 2009
- ❑ 90% reduction by 2013
- ❑ Not participating in national trading program



North Carolina

- ❑ EPA model rule to meet federal requirements PLUS additional state rules
- ❑ Installation of controls on ALL units
- ❑ By 2013, facilities must demonstrate they will have best controls that are economically feasible and will meet federal requirements by 2018
- ❑ Trading allowed only on excess reductions beyond those required by 2018
- ❑ Anticipate 88% reduction in Hg emissions by 2018



Pennsylvania

- ❑ Two-phased reduction approach
- ❑ 80% reduction by 2010
- ❑ 90% reduction by 2015
- ❑ Not participating in national trading program



Conclusions

- ❑ Mercury is a neurotoxin and many states believe it should be regulated stringently under the CAA.
- ❑ Many states believe EPA's CAMR is deficient—it's performance levels are too weak, its deadlines too protracted and it allows trading.
- ❑ Half of the states have adopted programs more stringent than CAMR; they differ widely.
- ❑ This regulatory uncertainty could have been avoided with a stronger federal program.



For further information

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